

REMARKS

This is intended as a full and complete response to the Office Action dated February 3, 2009, having a shortened statutory period for response set to expire on May 4, 2009. Please reconsider the claims pending in the application for reasons discussed below.

Claims 35-41, 43-56, 58-68, 70-71, 73-82 and 84-85 are pending in the application and remain pending following entry of this response. Claims 43-47 and 58-59 have been amended. Applicants submit that the amendments do not introduce new matter.

Further, Applicants are not conceding in this application that those amended (or canceled) claims are not patentable over the art cited by the Examiner, as the present claim amendments and cancellations are only for facilitating expeditious prosecution of the claimed subject matter. Applicants respectfully reserve the right to pursue these (pre-amended or canceled claims) and other claims in one or more continuations and/or divisional patent applications.

Claim Objections

Claims 43-47 and 58-59 are objected to as depending from previously canceled claims. These claims have been amended to depend from independent claims 40 and 55, respectively. Accordingly, Applicants respectfully request withdrawal of this objection.

Claim Rejections - 35 U.S.C. § 103

Claims 35-41, 43-56, 58-68, 70-71, 73-82 and 84-85 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Paulraj et al.* (U.S. Patent No. 6,351,499, hereinafter, “*Paulraj*”) in view of *Shattil* (U.S. Patent No. 7,317,750) and *Bolourchi et al.* (U.S. Patent No. 7,218,684, hereinafter, “*Bolourchi*”).

Applicants respectfully traverse this rejection.

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2141. Establishing a *prima facie* case of obviousness begins with first resolving the factual inquiries of *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The factual inquiries are as

follows:

- (A) determining the scope and content of the prior art;
- (B) ascertaining the differences between the claimed invention and the prior art;
- (C) resolving the level of ordinary skill in the art; and
- (D) considering any objective indicia of nonobviousness.

Once the *Graham* factual inquiries are resolved, the Examiner must determine whether the claimed invention would have been obvious to one of ordinary skill in the art.

Respectfully, Applicants submit that the Examiner has not properly characterized the teachings of the references and/or the claims at issue. Accordingly, a *prima facie* case of obviousness has not been established.

For example, Applicants respectfully submit that the Examiner has misconstrued the teachings of *Shattil* and *Bolourchi* of spatial multiplexing using “null-steering” as being equivalent to “non-steered” spatial multiplexing recited in the claims. As a result, Applicants submit that even if combined, the references cited by the Examiner fail to teach each and every element recited in the claims.

In rejecting claims 35, 39, 61 and 64, the Examiner refers to *Paulraj* as teaching certain elements recited in the claims, but concedes that *Paulraj* fails to teach “wherein the second spatial multiplexing mode is a *non-steered* spatial multiplexing mode.” However, the Examiner relies on *Shattil* and *Bolourchi* as teaching this element, for example, referring to column 26, lines 20-37 of *Shattil*, which reads in part:

... In some applications, maximal ratio combining may be employed. Other combining schemes may be employed. Combining may include interference cancellation, multi-user detection, null steering, spatial interferometry multiplexing, etc.

Applicants respectfully submit, however, that null-steering is, in fact, a form of “steered” spatial multiplexing. As described in *Bolourchi*, the null-steering method involves “steering” by creating a NULL at a location of user B (by altering the composite channel impulse response from BS to user A) and creating a NULL at the location of user A (by altering the composite

channel impulse response from BS to user B):

Our objective is to transmit information for user A without creating any interference to user B and, at the same time, transmit information for user B without creating any interference to user A. This objective is achieved by creating a null at the location of user B by altering the composite channel impulse response from BS to user A and creating a null at the location of user A by altering the composite channel impulse response from BS to user B. Here the composite channel impulse response is defined as a transfer function from spreader output at the BS to the antenna user's receiver unit.

To create a null at user B, we will select the complex weights, $W_{sub.1A}$, $W_{sub.2A}$ and $W_{sub.3A}$ so that the gain of the composite channel from the base station to user A is maximized and the composite channel gain from the base station to user B is 0.

In contrast, the claims recite a “non-steered” mode. As described in paragraph [0041] of the present application,

... the single user non-steered mode transmits NS data symbol streams from NT transmit antennas without any spatial processing at the transmitter...

Thus, the “null-steering” taught in *Shattil* and *Bolourchi*, which is actually a form of “steered” spatial multiplexing, can not reasonably be construed as a “non-steered” mode.

In rejecting claims 40, 48, 49, 54, 55, 67, 70, 73, and 77, the Examiner again refers to *Paulraj* as teaching certain elements recited in the claims. The Examiner concedes that *Paulraj* fails to teach “...a non-steered spatial multiplexing mode” and again relies on *Shattil* and *Bolourchi* as teaching this element. As noted above, however, Applicants respectfully submit that the Examiner has misconstrued the teachings of these references.

For at least these reasons, Applicants submit claims 40, 48, 49, 54, 55, 67, 70, 73, and 77, as well as their dependents, are allowable over the art of record and respectfully request withdrawal of these rejections.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that this

application is in condition for allowance and a Notice to that effect is earnestly solicited. If any points remain in issue that the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Charge Statement: For this application, the Commissioner is hereby authorized to charge any required fees or credit any overpayment to Deposit Account 17-0026.

Respectfully submitted,
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